

Atty. Docket No.: CA1457
PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No.: 09/783,163

REMARKS

Claims 1-20 are all the claims pending in the application.

Claims 1-5

The Advisory Action mailed on May 4, 2006, appears to specifically address only Applicants' arguments regarding the patentability of claim 1. In the aforesaid Advisory Action, the Examiner indicates with respect to the Examiner's rejection of claim 1 that Shank et al. teaches the device management table recited in claim 1 at 5:26-60. The Examiner further alleges that "transmitting I/O request to the storage device", allegedly taught by Shank et al., is "defining usability of the storage device." While the Applicants do not agree with such an unduly broad interpretation of Shank et al. by the Examiner, they amend the independent claim 1 to make it clear that the device management table stores information on the usability of the storage devices. The amended claim 1 clearly distinguishes the claimed invention from Shank et al. because "transmitting I/O request to the storage device," allegedly taught by Shank et al., clearly does not constitute storing information on the usability of the storage devices in the device management table and neither Axberg et al. nor Shank et al. teach or suggest the claimed device management table storing information on the usability of storage devices, as was explained in detail in the Applicants' Response under 37 C.F.R. 1.116, filed by Applicants on April 3, 2006.

Specifically, as stated in the Applicants' Response under 37 C.F.R. 1.116, filed by Applicants on April 3, 2006, at page 5, paragraph 2 of the Final Office Action, the Examiner expressly admits that the first cited reference, Axberg et al., does not specifically teach or suggest a device management table defining usability of the storage devices, which is

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specifically recited in claim 1. The Examiner alleges that the second cited reference, Shank et al., discloses such table at 5:26-40 (column 5, lines 26-40). Applicants carefully examined the portion of Shank et al. cited by the Examiner, as well as the remainder of that reference, but could not find the alleged teaching. Specifically, while Shank et al. teaches changing statuses of multiple data paths which can be used to access a storage device, Shank et al. does not teach or suggest the claimed device management table defining usability of the storage devices.

In more detail, Shank teaches a system wherein an array of storage devices may be accessed via a plurality of input-output (I/O) paths. The relevant portion of Shank et al. appearing at 3:14-24 states with reference to Fig. 1:

Storage device array 104 comprises a plurality of storage devices (typically hard disk drives) 106, 108, 110, 112, 114 and 116. These storage devices 106-116 are operatively coupled to the computer 102 via one or more input/output (I/O) paths, formed by one or more I/O bus paths 118, 120, 122 compliant with a SCSI (small computer system interface) or other protocol from the computer 102 to the disk array 104, and one or more I/O device paths 140-162 from the I/O bus paths 118, 120, 122 to the storage devices 106-116.

Applicants respectfully submit that the input-output (I/O) paths of Shank et al. are not the same as the storage device recited in the claim 1. This is abundantly clear from the above-cited portion of the specification of Shank et al.

The portion of Shank et al. at 5:26-40, cited by the Examiner in support of the rejection, deals with the virtual storage functions which change status of various input-output (I/O) data paths within the system of Shank et al. For example, the function Put Active Path Out Of Service, described at 5:30-32 of Shank et al. takes I/O paths previously designated as active and marks them out of service. As the Examiner would undoubtedly appreciate, the above functions

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described by Shank et al. deal exclusively with the aforesaid data paths (data channels) and have nothing to do with a table defining the usability of storage devices. The remainder of Shank et al. also does not supply the teaching of the aforesaid table.

Thus, Applicants respectfully submit that because neither Axberg et al. nor Shank et al. teach or suggest the device management table defining the usability of the storage devices, which is specifically recited in claim 1, claim 1 is patentable.

The Applicants further note that in the Final Office Action, the Examiner repeatedly refers to portion of Axberg et al. appearing at 20:20-60, alleging that said portion contains teaching of various limitations of the claim 1. Applicants carefully examined the portion of Axberg et al. referred to by the Examiner and could not find any of the alleged teachings. Specifically, in the aforesaid portion, Axberg et al. simply mentions a connection hash table containing certain function pointers. First, the Examiner alleges that the above portion of Axberg et al. teaches an "I/O port management table storing information on available connections between the I/O ports and the storage devices." Applicants respectfully submit that the specified portion of Axberg et al. does not contain the alleged teaching. Specifically, Axberg et al. never mentions that the connection hash table stores the information on available connections between the I/O ports and the storage devices.

The Examiner next states that the same portion of Axberg et al., appearing at 20:20-60, additionally teaches a storage on demand resource management processor capable of communicating with the SoD center system and of modifying the device management table and the I/O port management table. Again, the alleged teaching is not present in the aforesaid

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portion of the reference. First of all, the Examiner admits that the device management table is not taught by Axberg et al. Therefore, Axberg et al. could not possibly disclose a storage on demand resource management processor capable of modifying the table which is not present in Axberg et al. Second, the aforesaid passage of Axberg et al. contains no reference what so ever to the claimed storage on demand resource management processor, its capability to communicate with the SoD center system, and the capability to modify the device management table and the I/O port management table. Therefore, contrary to the Examiner's position, the aforesaid claim limitations are not taught or suggested by Axberg et al.

Yet further, the Examiner alleges that the same passage of Axberg et al., at 20:20-60, teaches the claimed plurality of host I/O controllers, an I/O path setting table defining available connections between the host I/O controllers and the I/O ports, an operating system capable of modifying the I/O path setting table, and an SoD agent capable of communicating with the SoD center system and of communicating with the operating system to request modification of the I/O path setting table. Again, Applicants' detailed examination of the relevant portion of Axberg et al. did not reveal any of the teachings alleged by the Examiner. When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such teaching or suggestion appears in the reference. See *In re Rijckaert*, 28 U.S.P.Q.2d 1955,7 (Fed. Cir. 1993). The Examiner has clearly failed to do so.

Applicants additionally note that the Examiner reads the I/O port management table defining available connections between the I/O ports and the storage devices, which is part of the storage subsystem recited in claim 1, on the hash tables 1121, 1122, 1123, 1124, or 1125 of

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Axberg et al. Applicants respectfully submit that the Examiner's reading is incorrect. First of all, the hash tables 1121, 1122, 1123, 1124, or 1125, which include the connection table referred to by the Examiner, are parts of the local library, which, in turn is a part of the agent 431 residing on the host system of Axberg et al. and not on the storage subsystem. Specifically, Axberg et al. teaches at "Local agent 431 is programming code and associated data residing in a host system, executing on its CPU 401. Agent 431 includes local library 1001, network daemon 1002, and shared memory 1003." At 20:20-60, cited by the Examiner Axberg et al. further teaches that the local library contains the aforesaid five hash tables. Therefore, the tables referred to by the Examiner are not parts of the storage subsystem as recited in claim 1. Therefore, Axberg et al. fails to teach or suggest a storage subsystem including an I/O port management table defining available connections between the I/O ports and the storage devices. Therefore, claim 1 is patentable for this additional reason as well.

Second, the hash tables of Axberg et al. are not the I/O port management table defining available connections between the I/O ports and the storage devices recited in claim 1. The hash tables described at 20:20-60 of Axberg et al., which include the connection tables referred to by the Examiner, contain a set of input parameters and a pair of function pointers, see Axberg et al. at 20:35-39. The aforesaid input parameters are described at 20:61-21:7. None of these input parameters even remotely relate to the "available connections between the I/O ports and the storage devices," contained in the table recited in claim 1. Applicants respectfully draw the Examiner's attention to the aforesaid portions of Axberg et al., containing no reference what so

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ever to the claimed I/O ports and the storage devices. Therefore, claim 1 is patentable for this additional reason as well.

Third, the hash tables of Axberg et al. by their very nature are used for a fast lookup of functions, as disclosed at 20:35-39. They are not used for defining available connections between the I/O ports and the storage devices as recited in claim 1. This provides an additional reason for patentability of claim 1 over the cited art.

Fourth, at page 3, first paragraph of the Office Action, the Examiner apparently relies on the doctrine of inherency to supply the teaching of a plurality of I/O ports recited in claim 1. Applicants respectfully submit that the purported use of the doctrine of inherency in the context of 35 U.S.C. 103 rejection is improper. It is well-established in the law that the standard of teaching required of a prior art reference to support a 35 U.S.C. 103 rejection is substantially more than to support a 35 U.S.C. 102 rejection of anticipation, however, since the Doctrine of Inherency does not extend beyond anticipation. Inherency of an advantage and its obviousness are different questions; that which may be inherent is not necessarily known; obviousness cannot be predicated on that which is unknown. *In re Adams*, 53 CCPA 996, 356 F.2d 998, 148 U.S.P.Q. 742 (1966). Inherency and obviousness are entirely different concepts. The principle of inherency is applicable only with respect to 35 U.S.C. §102 rejections. *In re Rinehart*, 531 F.2d 1048, 189 U.S.P.Q. 143 (CCPA 1976). For all the foregoing reasons, claim 1 is patentable.

Claims 2-5

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Applicants further respectfully submit that Examiner's rejection of claims 2-5 is rendered moot by the amendment of the parent claim 1 and that those claims are patentable by definition, at least due to their dependency on the patentable claim 1.

Claim 6

The Advisory Action fails to address Applicants' specific patentability arguments regarding claims 6-20 made by Applicants in the Response under 37 C.F.R. 1.116 filed by Applicants on April 3, 2006. Specifically, the Examiner failed to address claim 6 at all, and with respect to claims 10 and 19, simply stated that those claims are being rejected for the same reasons as claims 1-9. Therefore, Applicants incorporate herein all the patentability arguments made with respect to claims 6-20 in the Response under 37 C.F.R. 1.116 filed by Applicants on April 3, 2006 and respectfully request the Examiner to specifically address all those arguments.

In more detail, claim 6 recites a storage apparatus with a device management store, in which a status of a plurality of storage devices is stored, and an I/O port management store, in which available connections between said plurality of I/O ports and the plurality of storage devices are stored. First, the Examiner alleges that the respective device management store is described at 2:18-28 and 4:24-27 of Shank et al. As stated above with reference to claim 1, Shank et al. deals with storing information on input-output (I/O) data paths and not with storage devices. The above portions of Shank et al. cited by the examiner in support of rejection of claim 6 are also limited to the management of the input-output (I/O) data paths information. Therefore, neither Axberg et al. nor Shank et al. teach or suggest the claimed device management

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store, in which a status of a plurality of storage devices is stored. For this reason, claim 6 is patentable.

Second, the Examiner alleges that the I/O port management store, in which available connections between said plurality of I/O ports and the plurality of storage devices are stored, is taught at 6:58-63 of Shank et al. Applicants again carefully examined the cited portion of Shank but could not find any such teaching. Specifically, Applicant respectfully submits that while the cited portion does mention various I/O paths, it does not teach or suggest the claimed store.

When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such teaching or suggestion appears in the reference. See *In re Rijckaert*, 28 U.S.P.Q.2d 1955,7 (Fed. Cir. 1993). The Examiner has clearly failed to do so. Therefore, claim 6 is patentable.

Third, claim 6 additionally recites “a plurality of I/O ports providing an interface to said plurality of storage devices, each I/O port being uniquely connectable to one of a plurality of host I/O controllers on a user machine.” The Examiner cites portion of Shank et al. at 6:58-63 as teaching this element. Applicants respectfully disagree. While Shank et al. does mention “SCSI ports,” Shank et al. is silent as to “each I/O port being uniquely connectable to one of a plurality of host I/O controllers on a user machine.” In this regard, Applicants respectfully submit that the Examiner may not ignore the aforesaid claim limitation. Therefore, claim 6 is patentable for this additional reason as well.

Forth, because neither Axberg et al. nor Shank et al. teach or suggest the device management store and the I/O port management store, these references also do not disclose the

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“storage resource management processor being capable of communicating with a SoD center system and of modifying the device management store and the I/O port management store” and updating the “device management store to manage the status of one of the storage devices and said I/O port management store to manage the available connections between the one storage device and the user machine.” Portions of Shank et al. cited by the Examiner to support his contrary assertion, appearing at 2:18-28 and 4:24-27, deal exclusively with managing information in I/O paths and not storage devices. Absence of the teaching of the aforesaid two limitations from the cited art provides an additional reason for patentability of claim 6.

Finally, Applicants respectfully submit that to the extent the Examiner relies on the Examiner’s arguments made with respect to claim 1 in rejecting claim 6, the patentability arguments made by Applicants in connection with claim 1 are also applicable to claim 6.

For all the foregoing reasons, Applicants respectfully submit that claim 6 is patentable over Axberg et al. and Shank et al.

Claims 7-9

With respect to Examiner’s rejection of claims 7-9, Applicants respectfully submit that these claims are patentable by definition, at least due to their dependence on the patentable independent claim 6.

Claim 10

With respect to claim 10, the Final Office Action simply states that this claim is rejected for the same reasons as claim 1-5. In the Advisory Action, without any elaboration, the Examiner states that limitations of claim 10 are “met in rejection of claim 6.” However,

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Applicants note that claim 10 includes substantial limitations, which are different from the limitations of the claims 1-5 and also claim 6. Specifically, claim 10 recites: (1) receiving at a host an I/O path setting request from the center system, the I/O path setting request specifying a path to a storage resource in said storage subsystem allocated for use by the host, said path defining a unique communication channel from one of a plurality of host I/O controllers on said host to one of a plurality of I/O ports on said storage subsystem; (2) requesting an operating system resident in said host to update an I/O path setting in an I/O path setting table based upon said I/O path setting request; (3) receiving an update result from said operating system; and (4) sending a setting result to said center system based upon said update result, thereby enabling the center system to manage accessibility of the storage resource by the host. Because of the Examiner's failure to specifically address the above limitations of claim 10 and to point out to specific portions of Axberg et al. and Shank et al. teaching the respective elements of this claim, Applicants respectfully submit that with respect to claim 10, the Examiner has failed to establish the *prima facie* case of obviousness.

As it is well-known, in rejecting claims under 35 U.S.C. 103, the Examiner bears the initial burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992). Only if that burden is met, does the burden of coming forward with evidence or argument shift to the Applicants. *Id.* "A *prima facie* case of obviousness is established when the teachings from the prior art itself would have appeared to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 189 U.S.P.Q. 143, 147 (CCPA 1976)). If

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examination at its initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent. See 24 U.S.P.Q.2d at 1444.

Therefore, Applicants submit that claim 10 is patentable.

Claims 11-18

With respect to Examiner's rejection of claims 11-18, Applicants respectfully submit that these claims are patentable by definition, at least due to their dependence on the patentable independent claim 10.

Claim 19

Applicants respectfully submit that the above patentability arguments made with respect to claim 10, equally apply to claim 19. Therefore claim 19 is patentable.

Claim 20

First, claim 20 recites determining whether sufficient resources exist to meet the received storage resource demand. The Examiner alleges that this limitation is taught at 6:20-23 of Shank et al. Applicants respectfully disagree. The cited portion of Shank et al. deals with a lookup process which is invoked to locate a physical storage device hosting the virtual storage volume to which an I/O request is directed. There is nothing in the cited portion of Shank et al. as well as in the remainder of that reference that teaches or suggests the claimed determining of sufficiency of storage resources. When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such teaching or suggestion appears in the reference. See *In re Rijckaert*, 28 U.S.P.Q.2d 1955, 7 (Fed. Cir. 1993). The Examiner has clearly failed to do so. For this reason, claim 20 is patentable over the cited art.

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Second, Applicants respectfully submit that the demand for storage resources recited in the claim 20 is not the same as the I/O request described in portions Shank et al. cited by the Examiner.

Finally, Applicants respectfully submit that Axberg et al. and Shank et al. fail to teach or suggest the claimed management result indicating whether storage resources have been successfully allocated, which is received from the storage subsystem. The Examiner attempts to read this term on the configuration file containing a list of all available I/O paths described at 8:2-27 of Shank et al. Applicants respectfully submit that the Examiner's reading of Shank is incorrect. Specifically, the configuration file of Shank et al. does not indicate whether storage resources have been successfully allocated, but merely lists various paths to storage devices. Moreover, Shank et al. never mentions that the aforesaid configuration file is received from the storage subsystem, as recited in claim 20.

Axberg et al. does not remedy the above deficiencies of Shank et al. Therefore, claim 20 is patentable over Axberg et al. and Shank et al.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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MOUNTAIN VIEW OFFICE
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CUSTOMER NUMBER

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Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this AMENDMENT UNDER 37 C.F.R. § 1.114(c) is being facsimile transmitted to the U.S. Patent and Trademark Office this 8th day of June, 2006.



Mariann Tam